

WHAT IS CLAIMED IS:

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1. An illumination control device for illuminating an light modulation information display device with light, comprising:

at least one illumination device for irradiating light which is generated through discharging; and

a driving waveform generation section for controlling the light which is irradiated from the at least one illumination device to the light modulation information display device.

wherein:

the light modulation information display device is operable so as to have a first period and a second period during which an image is displayed;

during the first period, the driving waveform generation section applies a first voltage to the at least one illumination device, the first voltage causing the at least one illumination device to be turned entirely-ON; and

during the second period, the driving waveform generation section applies a second voltage to at least a portion of the at least one illumination device.

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2. An illumination control device according to claim 1,
wherein the second voltage is a partially-ON voltage
for causing at least a portion of the at least one
illumination device to be illuminated.
3. An illumination control device according to claim 1,
wherein the second voltage causes the at least one
illumination device to have a minimal discharging.
4. An illumination control device according to claim 1,
wherein the second voltage causes the at least one
illumination device to retain a partial discharging.
5. An illumination control device according to claim 1,
wherein:
each of the at least one illumination device comprises
two main discharging electrodes and a partial discharging
electrode provided in a vicinity of one of the two main
discharging electrodes;
the driving waveform generation section applies the
first voltage between the two main discharging electrodes
during the first period; and
the driving waveform generation section applies the
second voltage between the partial discharging electrode

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and the one main discharging electrode in the vicinity of the partial discharging electrode during the second period.

6. An illumination control device according to claim 5, wherein:

the at least one illumination device comprises a plurality of illumination devices; and

for each of the plurality of illumination devices, the driving waveform generation section individually selects a voltage to be applied and electrodes between which a discharge is to occur, depending on the first period and the second period of the illumination device.

7. An illumination control device according to claim 5,

wherein an outer wall of the illumination device comprises at least one of a light shielding surface or an ultraviolet ray-shielding surface in a vicinity of a portion between the one main discharging electrode and the partial discharging electrode.

8. A light modulation information display device comprising:

the illumination control device according to claim 1;

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and

a light modulation information display section,
wherein the light modulation information display
section controls light provided from the illumination
control device to display information.

9. A light modulation information display device
according to claim 8, wherein the controlling of the light
comprises at least one of transmission, absorption,
interception, reflection of the light.

10. A light modulation information display device
comprising:

a light modulation information display section; and
an illumination control device comprising at least
one illumination device having two main discharging
electrodes and a partial discharging electrode, wherein
light provided from the at least one illumination device
is irradiated to the light modulation information display
section, wherein:

the at least one illumination device has a length
greater than a corresponding dimension of the light
modulation information display section;

the at least one illumination device includes a first

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region corresponding to the light modulation information display section and a second region not corresponding to the light modulation information display section; and one of the two main discharging electrodes is disposed in the first region, and the other of the two main discharging electrodes and the partial discharging electrode are disposed in the second region.

11. A light modulation information display device according to claim 10, wherein:

the at least one illumination device undergoes a partially-ON state between the other of the two main discharging electrodes disposed in the second and the partial discharging electrode.

12. A light modulation information display device according to claim 10,

wherein the at least one illumination device retains a minimal discharging between the other of the two main discharging electrodes disposed in the second region and the partial discharging electrode.

13. A light modulation information display device according to claim 10, wherein the at least one

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illumination device retains a partial discharging between the other of the two main discharging electrodes disposed in the second region and the partial discharging electrode.

14. A light modulation information display device according to claim 10, wherein:

the light modulation information display section is split into a plurality of split display regions each containing a number of horizontal scanning lines;

at least one split activatable region is provided in the illumination control device so as to correspond to each of the plurality of split display regions, wherein at least one illumination device is assigned to each of the plurality of split activatable regions;

a voltage is applied between the two main discharging electrodes of at least one illumination device in at least one of the plurality of split activatable regions corresponding to at least one of the plurality of split display regions over which scanning of an image has progressed or completed; and

a voltage is applied between the partial discharging electrode and the other of the two main discharging electrodes of at least one illumination device in at least

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one of the plurality of split activatable regions corresponding to at least one split display region over which scanning of the image has not been performed.

15. A light modulation information display device according to claim 10, wherein:

the light modulation information display device further includes a light modulation material;

the light modulation information display section is split into a plurality of split display regions each containing a number of horizontal scanning lines;

at least one split activatable region is provided in the illumination control device so as to correspond to each of the plurality of split display regions, wherein at least one illumination device is assigned to each of the plurality of split activatable regions;

after scanning of an image over at least one of the plurality of split display regions has progressed or completed, with a delay corresponding to a response time of the light modulation material, a voltage is applied between the two main discharging electrodes of at least one illumination device in at least one of the plurality of split activatable regions corresponding to the at least one split display region; and

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a voltage is applied between the partial discharging electrode and the other of the two main discharging electrodes of at least one illumination device in at least one of the plurality of split activatable regions corresponding to the split display regions over which scanning has not been performed.

16. A light modulation information display device according to claim 15,

wherein the light modulation information display device further includes a light-switching element for controlling the light modulation information display section; and

after the scanning has progressed or completed, with a delay corresponding to a response time of the light modulation material and a response time of the light-switching element, a voltage is applied between the two main discharging electrodes of at least one illumination device in the at least one split activatable region corresponding to the at least one split display region.

17. A light modulation information display device according to claim 10, wherein:

based on an information displaying signal which is

applied to the light modulation information display section during a 1 frame, a voltage is applied between the two main discharging electrodes of the at least one illumination device during an entirely-ON voltage period,

a voltage is applied between the partial discharging electrode and the other of the two main discharging electrodes of the at least one illumination device during a partially-ON voltage period or a retention discharging voltage period.

18. A light modulation information display device according to claim 15, wherein:

when a period during which the voltage is applied between the other of the two main discharging electrodes and the partial discharging electrode transitions to a period during which the voltage is applied between the two main discharging electrodes, a delay corresponding to a response time of the light modulation material is introduced in the split activatable region after scanning over an image has progressed or completed in the light modulation information display section.